

Vědecké práce ovocnářské [Scientific Papers of Pomology], 2015, sv. 24, 228 s.

Vydal: Výzkumný a šlechtitelský ústav ovocnářský Holovousy s.r.o., 2015

ISSN 0231-6900

ISBN 978-80-87030-41-7

Diviš, P., Z. Olšovcová, A. Matějčík, J. Kaplan, A. Křenová. **Porovnání celkové antioxidační aktivity červenoplodých odrůd angrešt pěstovaných ve tvaru keře a dvoukmenného větene** [Comparison of total antioxidant activity of red varieties of gooseberry grown in the form of shaped bush and two stem spindle] s. 13-16

The aim of this study was to determine total antioxidant activity of seven different red gooseberry cultivars and to compare the measured total antioxidant activity of red gooseberry cultivars grown in the form of bush and in the form of two stem spindle. The highest antioxidant activity was measured in 'Alan' cultivar while the lowest in the 'Remarka' cultivar. The difference between total antioxidant activity of red gooseberry cultivars grown in the form of bush and in the form of two stem spindle was statistically insignificant.

Key words: gooseberry, antioxidant capacity, cultivation technology

Matějčík, A., J. Kaplan, J. Matějčíková, M. Kaplanová, B. Šmídová. **Výsledky hodnocení odrůd rybízu původem z ČR v intenzivním systému pěstování** [Evaluation of Czech currant cultivars planted in commercial growing technology] s. 17-22

Research was focused on comparison of Czech currant cultivars (4 blackcurrants – 'Démon', 'Fokus', 'Lota', 'Morávia'; 4 red currants – 'Jesan', 'Losan', 'Losinský pozdní', 'Rubigo' and 4 white currants – 'Jantar', 'Olin', 'Orion', 'Viktoria'). Commonly spread blackcurrant 'Ben Conan', red currant 'Rovada' and white currant 'Blanka' were chosen as standards. Growing technology was two stem spindle with support and was compared to standard bush. Planting was covered with foil mounted on the construction. Ground foil cover and drop irrigation was also used. Standard chemical treatments as well as fertilization for high quality fruits were applied. Plants were planted in distance 3 m × 0.8 m. The longest clusters were detected in blackcurrant 'Lota' – 11.3 cm (standard cultivar 'Ben Conan' – 8.3 cm), red currant 'Jesan' – 10.8 cm (standard 'Rovada' – 11.0 cm) and white currant 'Olin' – 13.5 cm (standard 'Blanka' – 16.0 cm). The highest harvest per plant was found in blackcurrant 'Lota' – 3.08 kg (standard cultivar 'Ben Conan' – 1.89 kg), red currant 'Losan' – 4.45 kg (standard 'Rovada' – 3.12 kg) and white currant 'Viktoria' – 3.41 kg (standard 'Blanka' – 4.87 kg). Organoleptic evaluation was higher in tested blackcurrants compared with standard cultivar. 'Jesan' and 'Rubigo' were evaluated better than standard red currant cultivar. 'Jantar' was the best from white currants in organoleptic evaluation and also better than standard cultivar. The differences were found in harvest time of observed cultivars. The range between early and late cultivar of blackcurrants as well as white currants was 18 days, while the range of red currants was 32 days.

Key words: currants, harvest time, yield, taste, cluster length

Kaplan, J., A. Matějčík, J. Matějčíková, M. Kaplanová, A. Křenová. **Výsledky hodnocení nových českých odrůd angreštu v intenzivním systému pěstování** [Evaluation of new Czech gooseberry cultivars planted in commercial growing technology] s. 23-28

The research focused on comparison of important pomological and economic parameters of eight new cultivars of gooseberry ('Alan', 'Darek', 'Karát', 'Karmen', 'Prima', 'Tamara',

'Veliš', 'Zebín') with standard, quality and world commercial cultivar 'Pax'. The technology of growing was realized in a system of seft-rooted planting material shaped into two-stem spindle with support and compared with the shaped bush. The planting was covered with foil mounted on the construction. Ground foil cover and controlled irrigation system were also used. Standard fungicid protection and additional nutrition were used to product high quality table fruits. The selected spacing was 3 m × 0.8 m. The interval of harvest ripeness ranged in the spectrum of varieties from 73 days since the date of ending of main flowering in the case of variety 'Zebín' to 98 days, when was the harvest ripeness of variety 'Karát'. This value of the standard variety 'Pax' was 78 days. The biggest average weight of fruits was found out in the case of cultivar 'Prima' (8.64 g). This parameter was 7.59 g in the case of cultivar 'Pax'. The fruitful cultivar in comparison to weight of the harvest per one plant in years 2013 and 2014 was the cultivar 'Karmen' with 2 174.4 g, the standard variety 'Pax' had 204.6 g. The majority of fruits of selected cultivars had the sweet and sour and middle aromatic character of taste, identically as the cultivar 'Pax'. Noticeable exception was the variety 'Prima' with slightly sour, softly aromatic taste of fruits. Varieties 'Pax', 'Alan', 'Karát', 'Karmen' and 'Tamara' belong among gooseberries with red color of skin and cultivars 'Darek', 'Prima', 'Veliš' and 'Zebín' belong among gooseberries with white, green and yellow color of skin. Fruits of majority of varieties have round or elongated shape, only the fruits of cultivar 'Karát' are drop-shaped. The cultivar 'Karát' was also evaluated as the cultivar with the best appearance of fruits.

Key words: gooseberry, cultivar, harvest ripeness, yield, taste

Židová, P., A. Tichá, R. Hyšpler, B. Šmídová, A. Matějčiček, Z. Zadák, F. Paprštejn. **Porovnání obsahu cukrů ve vybraných tradičních a perspektivních odrůdách třešni** [Comparison of sugar content in selected traditional and promising cultivars of sweet cherries] s. 29-36
Large gene pool of sweet cherries is located in Research and Breeding Institute of Pomology Holovousy, Ltd. For this study, we selected 11 promising cultivars of sweet cherries ('Amid', 'Aranka', 'Crispin', 'Helga', 'Horka', 'Korvik', 'Summit', 'Sunburst', 'Sweet Heart', 'Sylvana', 'Tamara') and 11 traditional cultivars of sweet cherries ('Bing', 'Burlat', 'Büttner's Späte', 'Germersdorfer', 'Karešova', 'Kaštánka', 'Kordia', 'Regina', 'Těchlovan', 'Tropričterova', 'Vanda'). Total sugar, glucose, sucrose and fructose were determined in these given cultivars. The samples were analysed by gas chromatography with flame ionisation detector (GC-FID) after derivatisation adjustment. Higher concentration of total sugar in promising cultivars (12.5 g/100 g) was detected in comparison with traditional cultivars (10.3 g/100 g). Higher values were detected also in the results of another sugars (glucose, fructose), with the exception of sucrose. Sucrose content of promising varieties was almost coincided with sucrose content of traditional varieties.

Key words: sweet cherry, sacharides, glucose, sucrose, fructose, GC-FID chromatography

Křenová, A., A. Matějčiček, P. Diviš, J. Pořízka. **Antioxidační aktivita vybraných odrůd červeného a bílého rybízu** [The antioxidant activity of selected species of red and white currant]s. 37-42
The aim of this study was to determine the total antioxidant activity of selected cultivars of red and white currant and mutual comparison of results. The total antioxidant activity of selected fruits was measured by spectrophotometric methods using free radicals ABTS⁺ and DPPH and expressed as a Trolox equivalent. There were 12 cultivars of red currant and 6 cultivars of

white currant measured. The highest values of total antioxidant activity showed cultivars of red currant 'Rovada', 'Jesan', 'Junifer' and 'Tatran' and white currant 'Orion' and 'Olin'.

Key words: free radicals, antioxidants, total antioxidant activity, ABTS, DPPH

Šmídová, B., D. Šatínský, K. Dostálová, A. Matějček, P. Židová. **Význam kanadských borůvek z hlediska obsahu zdraví prospěšných látek – antokyanů** [Importance of highbush blueberry related to the content of healthy substances – anthocyanins] s. 43-50

The aim of this research was to determine the anthocyanin content in selected cultivars of highbush blueberries (*Vaccinium corymbosum* L.) and monitoring the relation between the fruit weight and anthocyanin content. Anthocyanins were extracted from nine selected cultivars of highbush blueberry ('Bluecrop', 'Bluegold', 'Brigitta', 'Croatan', 'Duke', 'Herbert', 'Rancocas', 'Spartan' and 'Toro') and then separated using high performance liquid chromatography. Chromatogram with a full range of anthocyanins was a main result for each of these cultivars. Significant differences in the representation of individual anthocyanins were demonstrated in the observed varieties. Total anthocyanin content was determined using cyanidin 3-glucoside as a standard material by the sum of the peak areas of separated anthocyanins. The highest content of anthocyanins was observed in cultivar 'Bluegold' ($126.51 \pm 0.56 \text{ mg} \cdot 100 \text{ g}^{-1}$). Other cultivars with high anthocyanin content are 'Rancocas' ($100.77 \pm 2.89 \text{ mg} \cdot 100 \text{ g}^{-1}$) and 'Duke' ($84.94 \pm 1.73 \text{ mg} \cdot 100 \text{ g}^{-1}$). Anthocyanin content of other determined cultivars ranged between $43.13 \text{ mg} \cdot 100 \text{ g}^{-1}$ and $64.68 \text{ mg} \cdot 100 \text{ g}^{-1}$. Based on the measured results in terms of nutritional significance, we especially recommend consumption of varieties 'Bluegold', 'Rancocas' and 'Duke', and preferably fresh. There is some loss of anthocyanin content during storage and processing.

Key words: highbush blueberry, anthocyanins, polyphenolics, antioxidant activity, HPLC

Křenová, A., A. Matějček, P. Diviš, J. Pořízka. **Antioxidační aktivita vybraných odrůd černého rybízu** [The antioxidant activity of selected species of black currant]s. 51-55

The aim of this study was to determine the total antioxidant activity of selected cultivars of black currant and mutual comparison of results. The total antioxidant activity was measured by electron paramagnetic resonance (EPR) using free radicals ABTS•+ and expressed as TEACABTS (Trolox Equivalent Antioxidant Capacity). There were eight cultivars of black currant measured. The highest values of total antioxidant activity showed cultivars 'Ruben' and 'Omata'.

Key words: black currant, antioxidants, total antioxidant activity, ABTS, EPR

Mészáros, M., L. Laňar. **Afinita a růst *Amelanchier alnifolia* a křížence *Sorbopyrus auricularis* var. *bulbiformis* na nových podnožích v ovocné školce** [Affinity and growth of *Amelanchier alnifolia* and hybrid of *Sorbopyrus auricularis* var. *bulbiformis* on new rootstocks in fruit tree nursery] s. 57-62

In the last decades, research, professional and non-professional sphere starts to pay more attention for growing of perspective less known fruit species. During 2014–2015 research in Research and breeding institute of pomology Holovousy Ltd. (Czech Republic) was aimed to finding new suitable rootstocks for *Amelanchier alnifolia* and *Sorbopyrus* in nursery. The influence of *Crataegus monogyna* L., *Sorbus aucuparia* L., *Sorbus intermedia* (Ehrh.) Pers.,

Amelanchier Canadensis L. and Pyrus communis L. as rootstocks on affinity, mean height and total length of one-year-old wood for Amelanchier alnifolia and interspecific hybrid Sorbopyrus auricularis var. bulbiformis was evaluated. In the present time the Amelanchier alnifolia obtained best results in combination with S. intermedia, which ensures moderate growth intensity, but just moderate affinity in the nursery. For Sorbopyrus the best rootstock seem to be the S. intermedia, because of moderate growing intensity and very good affinity in the nursery.

Key words: affinity, growth vigor, Saskatoon, Sorbopyrus, fruit nursery

Mészáros, M., J. Náměstek. **Vliv způsobu ruční probírky na velikost plodů jabloní** [The influence of hand thinning methods on the fruit size of apple trees] s. 63-66

Fruit thinning during flowering and fruit set represent one of important agrotechnical operations for regular bearing and good fruit quality assuring. Better understanding of aspects influencing the effectivity of fruit thinning represents an actual topic. During the vegetation in 2014, the effect of two hand fruit thinning methods on apple trees of cultivar 'Golden Delicious' were evaluated. The trial variants were designed according to the method of the fruit removing: a) picking of fruits with peduncle from fruitlets, b) cutting of fruits with clippers without removing of peduncles. Both variants were present on different branches of the same trees and were evaluated from the half of June until the harvest. In particular dates the mean fruit size of marked fruits was similar. The results show that different hand thinning methods have probably no influence on fruit size during the vegetation as well as at the harvest. The objective of next research is to confirm the results in next years and to compare the effect of both variants separately on different trees.

Key words: hand thinning, clippers, peduncle, fruit size, Malus

Skřivanová, A. J. Blažková. **Opylovací poměry vybraných odrůd třešní** [Pollination relations among selected sweet cherry cultivars] s. 67-72

Aim of this work is the verification of pollination relations among selected 33 sweet cherry cultivars, from which are 24 Czech, bred in RBIP Holovousy Ltd. The suitability summary of the pollinators chosen from the other cherry cultivars was generated for these given cultivars. For this study we used the results of pollination relation assessment from the period 2003–2015 performed at RBIP Holovousy Ltd. The possible combinations suitable for the mutual pollination are e.g. cultivars 'Burlat' × 'Kassandra', 'Regina' × 'Irena', 'Christiana' × 'HL 15 463'. The summary is supplemented with the pollen incompatible cultivar combinations containing the genetically restricted mutual pollination. These combinations are e.g. cultivars 'Kordia' × 'Těchlovan', 'Tamara' × 'Sweet Early®', 'Kassandra' × 'Helga'.

Key words: sweet cherry, cultivars, pollination, pollinator, incompatibility

Sedlák, J., F. Paprštejn. **Fenotypová stabilita odrůdy hrušně 'Dita' po ozdravovacích procesu** [Phenotypic stability of pear 'Dita' after sanitation procedure] s. 73-78

The phenotypic stability of selected virus free plants of pear 'Dita' after chemotherapy with ribavirin in concentration 20 mg · l⁻¹ was observed on a long term basis. The observation was aimed at eight important characters of shoots and leaves according to classifier for pear. It concerned colour of shoots, pubescence of shoots, distinctness of lenticels on shoots, shape of

leaf buds, acuteness of buds, shape of leaves, colour of leaves, colour of petiole. During observation, any important phenotype differences from control plants were not noted. Abnormality of phenotype was noted only in the case of one character from eight characters observed. It concerned the incidence of long lanceolar leaves, which are untypical for the cultivar. Untypical leaves were noted in the first year in the case of one plant. These leaves grew as the first in the first months after transfer to ex vitro conditions. All other leaves, which were formed during the course of vegetation succession and in subsequent years of growing in ex vitro conditions, had all characters identical with the original cultivar. We assume that temporary incidence of untypical long lanceolar leaves could have been caused by specific in vitro culture conditions (higher humidity and growth regulators in used medium) and that it was not irreversible alteration of the genotype.

Key words: pear, sanitation, characters, in vitro

Sedlák, J., F. Paprštejn. **Ověření fenotypové stability jabloně po chemoterapii** [Verifying of phenotypic stability of apple after chemotherapy] s. 79-84

The aim of this work was to observe the phenotypic stability of apple cultivars 'Clijo' and 'Fragrance' after in vitro chemotherapy on a long term basis. The observation was aimed at 12 important characters of shoots and leaves according to classifier for apple. Any important phenotype differences from control plants were not noted after sanitation procedure. Phenotypic abnormality was observed only in the case of one character (leaf shape) with two clones of 'Fragrance' (clones 1 and 2) cultivated in higher concentration of ribavirin 100 mg · l⁻¹. The observed abnormality was incidence of rounded leaves, which are untypical for the cultivar. These untypical leaves, which were noted in the first year, grew as the first in the first months after transfer to ex vitro conditions. All other leaves, which were formed during the course of vegetation succession and in subsequent years of growing in ex vitro conditions, had all characters identical with the original cultivar.

Key words: in vitro, apple, chemotherapy, characters

Žďárská, I., R. Vávra, P. Suran, A. Skřivanová, J. Blažková. **Výskyt moniliové spály květů v pokusných výsadbách třešní a višní v roce 2014** [The occurrence of Monilinia blossom blight in the sweet and sour cherry experimental plantings in 2014]s. 85-96

In 2014, due to suitable conditions for infection, an increased incidence of monilinia blossom blight at the sweet and sour cherries was noticed. The aim of this study was evaluating the occurrence of infection in the experimental plantings at Holovousy, comparison the resistance of cultivars to this disease and for cherries also comparison infection rates at different stands. On individual trees two parameters were evaluated: intensity of blossom infestation (scale 0–4; 0 – without infestation and 4 – whole flower infested and dried up) and the total infestation of the tree (scale 1–9; 1 – without infestation 0 %; 9 – > 90 % of tree flowers affected). 24 sweet cherry cultivars were evaluated and five stands were compared. 23 sour cherry cultivars, which are cultivated only on the one stand, were evaluated. From an overall assessment, 'Regina' appears as the most resistant sweet cherry cultivar and 'Boas', 'Jade', 'Jachim' and 'Spinell' appear as the most resistant sour cherry cultivars. The lowest incidence of infection was observed in a standalone planting on the location Za parkem where a covering system was used.

Key words: *Monilinia laxa*, blossom blight, infestation, resistance, sweet and sour cherry cultivars

Jonáš, M., R. Vávra, J. Blažek. **Výskyt moniliniové spály na výhonech různých odrůd slivoní** [Occurrence of twig blight on different plum varieties]s. 97-103

Monilinia laxa (Aderhold & Ruhland) Honey ex. Dennis is an economically important fungal diseases. This pathogen can cause blossom and twig blight on stone fruits. The infestation of twigs by *Monilinia laxa* (Aderhold & Ruhland) Honey ex. Dennis was evaluated after natural infection in Holovousy (Czech Republic) plum orchards. The total infestation of twig blight of plum trees (scale 1–9; 1 – completely infested and 9 – without infestation) was evaluated. In total 56 plum varieties (2024 trees) were investigated in this study. Different susceptibility of plum varieties was found according to our evaluation. Varieties 'Najdona' (8.4), 'Common prune' (8.4), 'Elena' (7.8) and 'Presenta' (7.8) were evaluated as the most resistant. Oppositely varieties 'Topstar' (3.8), 'Bluefre' (4), 'Empress' (5.1) and 'Haganta' (5.4) were evaluated as the most affected.

Keywords: *Monilinia laxa*, infestation, *Prunus domestica* L., *Prunus salicina* Lindl

Suran, P., R. Vávra, L. Zelený, I. Žďárská. **Stanovení rezistence genotypů meruněk (*Prunus armeniaca* L.) k moniliniové spále květů (*Monilinia laxa*)** [Determination of resistance of apricot cultivars (*Prunus armeniaca* L.) to brown rot blossom blight (*Monilinia laxa*)] s. 105-112

Resistance of apricot genotypes to brown rot blossom blight caused by pathogen *Monilinia laxa* was examined at the Research and Breeding Institute of Pomology Holovousy Ltd. from 2013 till 2015. Apricot cultivars 'Harogem', 'Orangered', 'Hargrand', 'Darina', 'Goldrich', 'Sundrop', 'Bergeron', 'Skaha', 'Kompakta', 'Veharda', 'Harlayne', 'Betinka', 'Candela', 'Adriana', 'Pinkcot', 'Bergarouge' and new hybrids VOJ 5/15, HL 96/563, PL 2/258 were tested. These cultivars were sprayed by the inoculum gained from mummified fruits. Water sprayed blossoms were used as the control sample. Samples of branches were collected from trees in the development stage BBCH 57-59 – rosebud and placed to vases in laboratory conditions. Inoculum was applied on fully open blossoms. Symptoms of infection on flowers for each cultivar were evaluated after 48 hours of infection period in the cultivation boxes. Intensity of infestation on flowers was evaluated in scale 0–4. Cultivars 'Betinka', 'Darina', 'Bergarouge', 'Pinkcot' and apricot hybrid PL 2/258 were evaluated as the most resistant. Cultivars 'Hargrand', 'Skaha', 'Veharda', 'Adriana' and hybrid VOJ 5/145 were evaluated as the medium resistant to brown rot blossom blight infections. Cultivars 'Orangered', 'Goldrich', 'Sundrop', 'Bergeron', 'Harogem', 'Kompakta', 'Harlayne', 'Candela' and hybrid HL 96-563 showed the lowest resistance.

Key words: inoculum, pathogen, infection, ecological production, symptom

Suran, P., R. Vávra, L. Zelený, I. Žďárská. **Testování účinnosti přípravků proti moniliniové spále květů v ekologické produkci meruněk (*Prunus armeniaca* L.)** [Testing of efficacy of products against brown rot blossom blight in ecological production of apricots (*Prunus armeniaca* L.)] s. 113-120

Effect of ecological products against brown rot blossom blight of apricot was tested during the years 2013–2015 in laboratory conditions in the Research and Breeding Institute of Pomology

Holovously Ltd. Products and their combinations were applied on cultivars 'Harogem' and 'Veharda'. Tested products were Flowbrix, Sulfurus, Myco-Sin, Lime sulphur, Vitisan, Boni Protect and as reference chemical product was involved Sporgon 50 WP. Samples of branches from both cultivars were cut off in development stage BBCH 57-59 (rosebud) and put in a container filled with water. Tested products were sprayed on fully open blossoms. Inoculum was sprayed on the branches immediately after drying of testing products on blossoms. Concentration of inoculum was determinate as 4×10^5 spores \times 1 ml⁻¹. Infected samples of branches were cultivated for 48 hours in a cultivation box. Blossom infection was evaluated according to the scale 0–4 on each variant. Total infection of blossoms was expressed by Townsend-Heuberger formula. Efficacy of treatments compared to control was defined according to Abbott's method. The best efficacy showed variants Flowbrix + Sulfurus and Myco-Sin + Sulfurus in 2013 (84 % and 81 % respectively).

Key words: *artificial infection, efficacy, pathogen, ecological products, Aureobasidium pullulans, Monilinia laxa*

Kloutvorová, J., Š. Demelová, D. Rybanská, P. Jaklová, J. Kupková. **Ověření účinnosti fungicidu Aliette 80 WG proti *Venturia inaequalis* (Cook) Wint.** [Testing of efficacy of fungicide Aliette 80 WG against *Venturia inaequalis* (Cook) Wint.] s. 121-127
*Secondary efficacy of Aliette 80 WG against apple scab caused by the fungus *Venturia inaequalis* was verified in laboratory, greenhouse and field tests. The product Aliette 80 WG showed efficiency 91.15 % in laboratory tests and 91.46 % in greenhouse experiments. In field small plot trials, the efficiency achieved 81 % (leaves) and 71.8 % (fruits).*

Key words: *apple, *Venturia inaequalis*, control, fosetyl-Al, Aliette 80 WG*

Skalský, M., D. Rybanská, I. Silovská. **Hodnocení účinnosti vybraných přípravků proti *Phyllobius oblongus* (Linnaeus, 1758)** [Evaluation of the biological efficacy of selected products against *Phyllobius oblongus* (Linnaeus, 1758)] s. 129-136
*This study focuses on the evaluation of the influence of selected insecticides on the mortality of *Phyllobius oblongus*, a potentially significant pest of fruit orchards, mainly young growths. Two types of tests were conducted measuring the effectiveness of the products Calypso 480 SC (thiacloprid), Integro (methoxyfenozide), SpinTor (spinosad) and PREV-B2 (ethanolamine borate). The first test focused on the evaluation of the contact influence of the products, the second test evaluated the effects of indirect exposure to the tested products. The evaluation of *Phyllobius oblongus* mortality was conducted 24 and 48 hours after the application of the products. The highest effectiveness was seen using the SpinTor (spinosad) product which resulted in 100% mortality after 24 hours already. The effectiveness of the Calypso 480 SC (thiacloprid) was 100% after 48 hours for the first measurement experiment while the second experiment resulted in 100% mortality after 24 hours already. PREV-B2 (ethanolamine borate) showed 100% effectiveness after 24 hours for the first measurement experiment, in the second experiment effectiveness reached 92.5% effective both at the first and second measurement. The Integro (methoxyfenozide) was not very effective as the first experiment showed 54% effectiveness after 48 hours and the second only 30%.*

Key words: *European Snout Beetle, plant protection, product efficacy, Thiacloprid, Methoxyfenozide, Spinosad, Ethanolamine boron*

Vávra, R., A. Skřivanová, H. Drahošová, J. Blažková, L. Odstrčilová, B. Krška, M. Jonáš. **Odolnost genotypů meruněk k hnilobám plodů vyvolaných patogeny rodu *Monilinia*** [Resistance of apricot genotypes to Brown Fruit Rot (*Monilinia* spp.)] s. 137-144

The objective of this study was resistance evaluation of apricot genotypes to brown fruit rot on fruits causing by pathogen from Monilinia species. Totally 46 apricot genotypes were evaluated in the five growing seasons from the year 2009 to the year 2013. Results showed differences among tested apricot cultivars and hybrids to infection by the pathogen Monilinia spp. both after artificial inoculation and in conditions of natural infection. Lower fruit brown rot injury was recorded after natural infections on fruits of cultivars 'Forum', 'Harcot', 'Harogem', 'Harlayne', 'Harval', 'Darina', M 52 and 'Betinka'. On the contrary, cultivars 'Candela', 'Freda', 'Roxana' and 'Veecot' were evaluated as the most sensitive after natural infection by pathogen from Monilinia spp. The artificial inoculation by pathogen from Monilinia spp. corresponded with natural infections general and confirmed resistance in natural conditions in orchards.

Key words: *Monilinia laxa, Monilinia fructigena, Prunus armeniaca, apricot genotypes, pathogen infection*

Šillerová, J., J. Korba, F. Paprštejn, J. Sedlák, A. Matějčík. **Výskyt přirozené infekce bakteriální spály růžovitých a screening složení bakteriální mikroflóry na květech a listech hrušní** [Occurrence of fire blight (*Erwinia amylovora*) and screening of composition of bacterial communities on pear leaves] s. 145-152

*The aim of this study was to screen the composition of epiphytic microflora of pear flowers and leaves from three localities with different soil and climatic conditions and to observe natural infection of fire blight. Bacterium *Erwinia amylovora* (Burrill) Winslow et al. is a quarantine fire blight pathogen. Samples were taken in years 2013–2015 three times during the season by random selection of flowers and leaves in phenological stages of flowering, extension growth and during fruit ripening. Subsequently, bacteriological analyses were performed by traditional culture methods on solid agar media (King B and meat peptone agar). Bacterium *Erwinia amylovora* was not detected in any sample. Also symptoms of natural infection were not observed. The composition of bacterial spectrum of studied bacteria was in accordance with the microclimate of studied area. In Slaný with colder and drier climate, genus *Bacillus* prevailed, in Holovousy with warmer and wetter climate, genus *Pseudomonas* and *Pantoea* dominated and in Lednice in warmer and drier region, genus *Pseudomonas* dominated.*

Key words: *pear cultivars, fire blight, *Erwinia amylovora*, epiphytic mikroflóra*

Laňar, L., J. Sus, M. Mészáros. **Vliv použitého přípravku a jeho koncentrace na větvení a růst odrůdy jabloně 'Topaz' ve školce** [Effect of product and its concentration on branching and growth of apple variety 'Topaz' in fruit nursery] s. 153-158

Intensive fruit production sector demands well feathered fruit trees for planting of new orchards. To satisfy the demand for well feathered trees it is necessary to utilize some branch-inducing method. Application of phytohormones is one of the possibilities. The objective of the research was to investigate effectivity and safety of two phytohormonal products, moreover, each in three different concentrations. We treated two year old 'Topaz' apple nursery trees in 2014 with two phytohormonal products: Globaryl 100 in concentration 5, 10 or 20 ml/l and Progerbalin LG in concentrations 10, 25 or 50 ml/l. Products were applied two times fortnight

apart. Following parameters were assessed: height of the first lateral feather longer than 1 cm above the snip, number of lateral feathers longer than 30 cm, number of lateral feathers 10–30 cm long, number of lateral feathers 1–10 cm long and length of terminal shoot. The most effective were the highest concentrations of both applied products, however, Progerbalin LG in concentration 50 ml/l caused damage of the leaves thus cannot be considered as a safe concentration. Sufficient effectivity was reached by both products applied in medium concentrations, moreover, no damage was observed. The lowest concentrations of both products were not effective enough for practical use. Concluding our results the use of Globaryl in concentration 10 or 20 ml/l and Progerbalin LG in concentration 25 ml/l is effective on 'Topaz' variety if applied two times in fourteen days interval.

Key words: *apple, branching, benzyladenin, Globaryll 100, Progerbalin LG*

Suchá, J., L. Valentová, R. Čmejla, M. Bohunická. **První výsledky hodnocení citlivosti odrůd hrušní 'Dicolor', 'Bohemica', a 'Lucasova' na onemocnění fytoplazmové chřadnutí hrušně** [The first results of the evaluation of the sensitivity of pear tree varieties 'Dicolor', 'Bohemica' and 'Lucasova' to pear decline disease] s. 159-168

Pear tree varieties susceptibility of 'Dicolor', 'Bohemica' and 'Lucasova' to pear decline disease were compared by evaluating symptoms, diagnosis 'Candidatus Phytoplasma pyri' and phytoplasma quantification in plant tissues by molecular methods. 'Dicolor' demonstrated the highest sensitivity. Variety 'Bohemica' compared with the variety 'Dicolor' showed higher resistance. Variety 'Lucasova' manifested the highest resistance.

Key words: *pear tree, varieties susceptibility, 'Candidatus Phytoplasma pyri'*

Laňar, L., J. Sus, M. Mészáros. **Vliv smáčedla a frekvence ošetření na větvení odrůdy jabloně 'Rubinola' ve školce** [Effect of added surfactant and frequency of spraying on branching of apple variety 'Rubinola' in fruit tree nursery] s. 169-176

Utilization of surfactants to increase the effect of branching agent in fruit tree nursery was not broadly studied in past. Moreover, accessibility of surfactants differs in different countries. The study of concentration and number of repetitions when chemically inducing branching was studied but less attention was paid to the length of interval between repeated sprays. Objective of the research was to test effectivity of different surfactants added to branching product and also to test the importance of interval length between sprays on final effectivity. Two year old hard to branch 'Rubinola' apple nursery trees were double treated in 2014 with branching agent Progerbalin LG 25 ml/l. Following products were added to test their effectivity: Agrovital 1,5 ml/l, Silwet L-77 1,5 ml/l, Spartan 1,5 ml/l, Tween 20 1,5ml/l, X-Change 2 ml/l and tank mix Tween 20 1,5 ml/l + X-Change 2 ml/l. Treatment of Progerbalin LG without added surfactant and control treatment without any spraying were included. All abovementioned treatments were applied in two different frequencies. The interval between sprays was either 7 or 14 days. Following parameters were assessed: number of lateral feathers longer than 30 cm, number of lateral feathers 10–30 cm long, number of lateral feathers 1–10 cm long, total number of all laterals and length of terminal shoot. Our results showed that among tested surfactants the Silwet L-77 is the most effective. Less effective were the surfactants Tween 20 and Spartan and the rest products were not sufficiently effective. Comparing two lengths of interval between sprays the shorter 7 day interval was more effective than 14 day interval.

Key words: *apple-tree, branching, surfactant, interval, knipboom*

Běliková, H., L. Laňar, M. Mészáros. **Opatření zmírňující vliv půdní únavy na růst podnože St. Julien A v ovocné školce** [Measures to alleviate the influence of soil borne disease to growth of St. Julien A in fruit nursery] s. 177-186

During the years 2013–2015 an experiment with rootstock ‘St. Julien A’ was realized to assess the effect of two different remedial methods on the soil borne disease occurrence in fruit nursery. In the first method two different forecrops – a) barley (variant 1) or b) marigold (variant 2) were used. This method was combined with application of different commercial products (Symbivit without hydroabsorbent, Symbivit with hydroabsorbent, Offyougrow TRIC and soil conditioner PRP SOL) as six different sub-variants. These products were applied individually or in combination, to the soil surface or into the soil profile. Following parameters, like the rootstock cross-section diameter in 10 cm above the ground and the weight of the above-ground biomass were assessed. Rootstocks on the plot with the forecrop marigold (variant 2) showed significantly higher cross-section diameter and weight of biomass as compared to the plot with forecrop spring barley (variant 1), which corresponded to a visual evaluation of the rootstocks. The commercial products had no significant effect on the above-ground biomass and had just slight effect to the cross-section diameter. Based on these results, forecrop choice had the highest impact on the alleviation of soil borne disease. The used products have not indicated to be successful remedial measures to mitigate the negative impact of soil borne disease on the growth of rootstocks St. Julien A in this experiment.

Key words: soil borne disease, forecrop, mycorrhizal fungi, mycoparasite fungi, *Trichoderma harzianum*

Vávra, R., J. Blažek, P. Vejl, M. Jonáš. **Střídavá plodnost u jabloní se sloupcovým typem růstu** [Biennial bearing of apple genotypes with columnar tree growth habit] s. 187-192
Columnar growth habit of apple cultivars is characteristic by the central tree axis with short fruiting spurs. The columnar growth habit is controlled by the dominant allele of Co gene discovered in ‘McIntosh Wijcik’ a branching sport of cultivar ‘McIntosh’. Hypothesis of the existence of genotypes with columnar growth with annually regular high crop were confirmed in this work. Biennial bearing appeared both on apple genotypes carrying gene Co and genotypes originated from ‘James Grieve Super Compact’ characterized by extremely weak growth. The number of fruits in harvest was recorded approximately at the same level on genotypes carrying Co gen for columnar tree growth habit and on genotypes with extremely low growth originated from ‘James Grieve Super Compact’. Regular annual bearing was recorded approximately at rate 5 % on B clone genotypes carrying gene Co proving that biennial bearing is not connected with gene Co.

Key words: McIntosh Wijcik, fruit crop, Co gene, regular annual bearing, tree architecture

Pištěková I. **Vliv foliární aplikace pomocných prostředků na výnos a kvalitu produkce ekologicky pěstovaného jahodníku v kryté kultuře** [Effect of foliar application of auxiliary preparations on yield and quality of organic strawberry production under cover] s. 193-198
The effect of auxiliary preparations on yield and nutritional value of strawberry fruits was evaluated during years of 2014 and 2015 in the Research and Breeding Institute of Pomology in Holovousy Ltd. Following products were used for testing: Alginure, Prev-B2 and Trifender WP. Chosen strawberry cultivars ‘Flair’, ‘Rumba’ and ‘Darselect’ were treated by mentioned

products and as a control variant were used untreated plants. There were not recorded any positive effects of auxiliary preparations on evaluated parameters, while the highest yield reached the cultivar 'Darselect' treated by product Algisure in the second research season. There were not found any significant differences in the solid value content of fruits between treated strawberry cultivars and untreated control variant during years 2014 and 2015.

Key words: organic production of strawberries, varieties, harvest, yield

Holubec, V., F. Paprštejn, J. Harčarik, L. Leišová-Svobodová. **Shromažďování materiálu a výzkum původních lokalit planého a krajového genofundu drobného ovoce v ČR** [Collecting of material and research of original sites of wild germplasm and landraces of small fruits in the Czech Republic] s. 199-206

Crop wild relatives of small fruit species, namely Rubus, Ribes, Sorbus were searched in localities of Krkonoše Mountains. Old landraces and obsolete cultivars of Ribes were searched in Krkonoše and Šumava Mountains. Representative samples of wild populations and of landrace bushes were sampled for DNA analysis and phenotyping. Cuttings were collected from landraces for propagation and cultivation in ex situ nursery. All sites of CWR were GPS localised, characterised botanically and provided with phytosociological relevé. The samples will be compared with similar materials from Norway to assess diversity. Critically endangered glacial relic in Czech flora Rubus chamaemorus will be genetically compared with the analogic Norwegian populations. Landraces still occurring in landscape will be characterized similarly. The needs for conservation actions in situ and ex situ will be assessed.

Key words: cultivars, specie, germplasm, fruit, population

Zelený, L., J. Blažek, V. Kadlecová. **Odrůda jabloně se sloupcovým typem růstu 'Slendera'** [Columnar growth type apple cultivar 'Slendera'] s. 207-212

Apple cultivar 'Slendera' has originated from a crossing 'Florina' × 'Telamon' and was done in RBIP Holovousy in 1992. Upon State variety trials since 2009, it was registered in 2015 in Czech Republic and has been legally protected since 2014. Trees grow rather vigorously with columnar growth habit. Trees are precocious, medium bearing and gives regular yields. Fruits are set on thick, short or medium long fructiferous shoots. They are growing in clumps, stalk is mainly short. Fruits are medium to large size, its shape is conical, with moderate ribbing. Green ground-colour of skin is covered by red over-colour, solid flushed. Fruit skin is thick and smooth, with middle susceptibility to surface russetting and with numerous lenticels. Flesh is white and medium firm in its consistency. Taste is good, slightly acidulated and medium juicy. Predominant colour of the blossoms at the balloon stage is light pink. 'Slendera' bears resistance gene against scab obtained from Malus floribunda (Vf gene) and it is also resistant to powdery mildew. Harvest time is similar to variety 'Golden Delicious' at the beginning of October and consuming time starts from December. Fruits can be stored till February under cool storage conditions and till June under ULO atmosphere.

Key words: apple, cultivar, 'Slendera', columnar growth, description, evaluation

Blažková, J., A. Skřivanová, L. Zelený. **Odrůda třešně 'Korvik'** [Sweet cherry cultivar 'Korvik'] s. 213-216

Regarding pomology point of view 'Korvik' is a mazzard cherry. Its harvest maturity varies within fifth and sixth sweet cherry week. Trees grow medium vigorously or more strongly. Trees have high globular slightly dense canopy and slight tendency to bare wood of branches. Fruit form is cordate and fruit taste is very good. Fruits are large, weight range within 9 to 10 g, whereas fruit proportions vary around 25 mm in fruit high, 25.5 mm in its width and 22.5 mm in its thickness. The fruit skin is darkly red. The fruit stem is long. Fruit stone is medium large possessing elliptic shape. This cultivar is self-sterile. Time of flowering is late. Regarding diseases flowers are less damaged by Monilinia pathogen and fruits do not suffer from Monilinia rot. They are resistant to cracking in rainy season.

Key words: *sweet cherry, variety, 'Korvik', description, evaluation, pomological characteristics*